



2683
File No. 1351.01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Memran EXAMINER: Trost
SERIAL NO.: 10/002,382 ART UNIT: 2683
FOR: System for Utilizing Vacuum Tubes In Computer Audio
Circuitry
FILED: 10/20/01

REVIVED PETITION TO MAKE SPECIAL
PURSUANT TO MPEP - 708.02(II) AND 37 CFR 1.102

Mail Stop
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

RECEIVED

JUN 06 2003

Dear Sir:


Technology Center 2600

This is a renewed petition under MPEP 708.02 to make the instant application special by reason of infringement of the invention thereof.

Any petition fee under 37 CFR 1.17(i) should be charged to PTO Deposit Account No. 502557. Applicant is a small entity.

Also enclosed is an Opinion of Patentability and an Opinion of Infringement which, collectively, satisfy the requirements of MPEP 708.02(II).

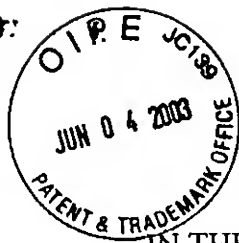
Respectfully submitted,
LOUIS I. MEMRAN

By: 
Melvin K. Silverman
Reg. No. 26,234

500 WEST CYPRESS CREEK ROAD
SUITE 500
FORT LAUDERDALE, FL 33309
TELEPHONE (954) 351-7474
FACSIMILE: (954) 492-0087

Enclosures

1. Opinion of Patentability.
2. Opinion of Infringement.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Memran EXAMINER: Trost
SERIAL NO.: 10/002,382 ART UNIT: 2683
FOR: System for Utilizing Vacuum Tubes In Computer Audio
Circuitry
FILED: 10/20/01

OPINION OF INFRINGEMENT

RECEIVED

JUN 06 2003

Technology Center 2600

Mail Stop
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Applicant's attorney of record, have reviewed the attached Declaration of L. Memran and articles of AOPEN.COM, Inc. of Taiwan, Republic of China concerning an AX4B-533 vacuum tube and its related motherboard. In or about June, 2002, AOPEN introduced into the United States a chipset which integrated a AX4B-533 tube into a CPU motherboard utilizing an Intel 845 chip.

The Applicant has made a rigid comparison of the allegedly infringing device, and the same is attached herewith in the form of said Declaration.

AOPEN's incorporation of a vacuum tube into a chipset was for the purpose of enhancing the audio quality of speakers associated with a personal computer, and as such, falls within the scope of Applicant's Claim 1 which reads as follows:

- “1. A tube card for use with computer audio circuitry comprising:
at least one vacuum tube, each of said vacuum tube having an input and an output; a DC-to-DC voltage converter supplying high voltage to said vacuum tube; and an analog output signal for a sound input to said at least one vacuum tube, said output of said at least one vacuum tube connected to an external device.”

Further, independent Claim 5 of the present application reads as follows:

- “5. A combination tube card for use with computer audio circuitry, comprising:
at least one vacuum tube, each of said vacuum tube having an input and an output; a DC-to-DC converter supplying high voltage to said vacuum tube; and
a sound chip having an analog output, said analog output connected to an input of at least one vacuum tube, said output of said at least one vacuum tube connected to an external device.”

The above claims thereby cover the use of the Applicant's technology with reference to both sound cards and sound chips, and also relate to the use thereof within a motherboard of a computer as, for example, is reflected in Claim 6 which reads as follows:

- “6. The combination of a tube card for use with computer audio circuitry of claim 5 wherein:


said sound chip having a digital input/output, said digital input/output connected to a motherboard of a computer.”

In view of the above, and the analysis of my client Louis Memran, the motherboard offered by AOPEN.COM since June, 2002 falls within the scope of one or more of the claims of the instant application.

Upon information and belief, AOPEN.COM not only offers their products on the Internet but, as well, sells through U.S. distributors and has been doing so for several months under the trademark COMPUTUBE.

The undersigned does not know of any patent held by AOPEN.COM or its distributors. Further, given the publication of the instant Application on or about May 2, 2002, it is unlikely that an application for patent directed to the COMPUTUBE could have been filed unless, unknown by the undersigned, the same had already been filed by such date. In any event, such filing would, in all likelihood, have been well subsequent to the Applicant's domestic priority under Serial No. 60/245,285 of November 1, 2000.

Respectfully submitted,
LOUIS I. MEMRAN

By: 
Melvin K. Silverman
Reg. No. 26,234

500 WEST CYPRESS CREEK ROAD
SUITE 500
FORT LAUDERDALE, FL 33309
TELEPHONE (954) 351-7474
FACSIMILE: (954) 492-0087

Enclosure

Declaration of Louis Memran.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Memran EXAMINER: Trost
SERIAL NO.: 10/002,382 ART UNIT: 2683
FOR: System for Utilizing Vacuum Tubes In Computer Audio Circuitry
FILED: 10/20/01

OPINION OF PATENTABILITY

Mail Stop
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

RECEIVED
JUN 06 2003
Technology Center 2800

Dear Sir:

Currently, solid state devices such as transistors and the like are used in IC boards for the amplification of audio signals in computer audio circuitry. Transistors are compact, cheap, and reliable components. However, transistors are unable to produce an audio sound which is particularly pleasant to the human ear. In low cost digital-to-analog converters, the sound which the transistors produce is often harsh. This technology therefore does not enhance the sound quality of low cost speakers which are employed in most personal computers today. Conversely, vacuum tubes, where used at all in contemporary electronics, are employed in expensive audio systems which require transformers and ancillary vacuum tubes for their operation.

This invention provides a system and means of integrating vacuum tubes into the motherboard of a personal computer to thereby furnish, to the otherwise pedestrian speakers thereof, high quality audio characteristics.

I have caused to be effected a careful and thorough search of the art. As a result, the only art now known to the Applicant in which vacuum tubes are employed in analog to digital or digital-to-analog technology relate to the areas of audio processing; sound mixing, often as a part of a loudspeaker control circuit; and electric instruments.

This technology is reflected in the following:

U.S. Patent No. 5,721,784 (1990) to Bernardo, entitled Asymmetrical Driver for Asymmetrical Loudspeakers.

U.S. Patent No. 5,789,689 (1998) to Doidic, entitled Tube Modeling Programmable Digital Guitar Amplification System;

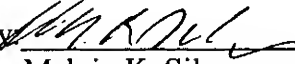
U.S. Patent No. 802,182 (1998) to Prichard, entitled Audio Process Distortion; and

U.S. Patent No. 6,350,943 (2002) to Suruga et al, entitled Electric Instrument Amplifier.

A copy of the Abstract of each of the above is enclosed herewith. As may be noted therefrom, traditional vacuum tubes, where combined in some fashion with contemporary digital circuitry, relate almost exclusively to audio amplifiers and amplifiers for electric instruments, such as electric guitars. Accordingly, the art does not teach a practical means of integrating a vacuum tube into a motherboard of a CUP of a personal computer having, as an effect thereof, the enhancement of the audio quality of otherwise conventional speakers associated with the personal computer.

I therefore am of the opinion that the invention, as claimed, is clearly allowable over all effective art of record.

Respectfully submitted,
LOUIS I. MEMRAN

By 
Melvin K. Silverman
Reg. No. 26,234

500 WEST CYPRESS CREEK ROAD
SUITE 500
FORT LAUDERDALE, FL 33309
TELEPHONE (954) 351-7474
FACSIMILE: (954) 492-0087

Enclosures

Abstract of patents set forth above.



US005721784A

United States Patent [19]

Bernardo

[11] Patent Number: 5,721,784

[45] Date of Patent: Feb. 24, 1998

[54] ASYMMETRICAL DRIVER FOR
ASYMMETRICAL LOUDSPEAKERS[76] Inventor: Carmelo F. Bernardo, 12 Street,
Lakandula, Angeles City, Philippines

[21] Appl. No.: 593,884

[22] Filed: Jan. 30, 1996

[51] Int. Cl.⁶ H04R 1/02

[52] U.S. Cl. 381/89; 381/59

[58] Field of Search 381/96, 89, 59,
381/61

[56] References Cited

U.S. PATENT DOCUMENTS

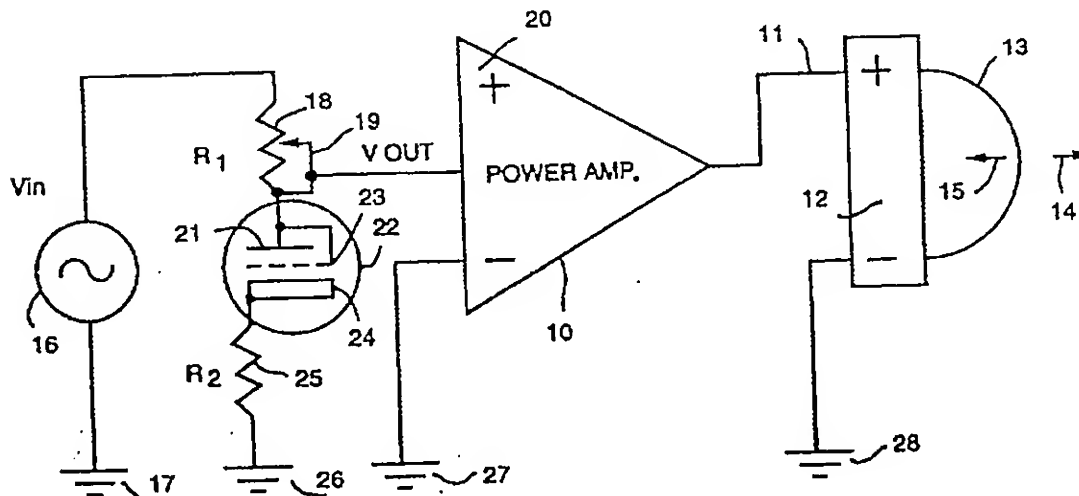
2,313,098	3/1943	Shepard, Jr. .	
3,047,661	7/1962	Winker .	
4,207,430	6/1980	Harada et al. .	
4,260,954	4/1981	Crooks .	
4,276,443	6/1981	Meyers .	
4,340,778	7/1982	Cowans et al. .	
4,809,336	2/1989	Pritchard	381/61
4,821,323	4/1989	Drozdzowski .	
4,903,870	3/1990	Nagi	381/59
4,995,084	2/1991	Pritchard	381/61
5,430,802	7/1995	Page .	
5,542,001	7/1996	Reiffin	381/96

Primary Examiner—Curtis Kntz
Assistant Examiner—Vivian Chang
Attorney, Agent, or Firm—Schweitzer Cornman Gross &
Bondell LLP

[57] ABSTRACT

An audio output system, having loudspeakers with an asymmetrical output in response to symmetrical modulated input signals, is provided with a unidirectional limiting circuit for proportionally reducing input signals of a polarity to drive the loudspeaker in the direction of its greatest response. In its basic form, the limiting circuit is a voltage limiting circuit, preferably a voltage divider, which includes a rectifier device. When the driving signal is of a polarity to produce a greater response from the loudspeaker, the rectifier device conducts and the magnitude of the signal voltage is reduced, resulting in substantially greater uniformity of output response of the loudspeaker in both directions. When the limiting circuit is placed on the input side of the power amplifier, the rectifier device advantageously is a vacuum tube connected as a diode. When located in the output stages of the power amplifier, where higher signal voltages are available, solid state rectifier devices may be employed. Multiple asymmetrical loudspeakers may be controlled using a single limiting circuit, provided all such loudspeakers are connected so that their greater response results when the signal thereto is of the same polarity.

9 Claims, 5 Drawing Sheets





US005789689A

United States Patent [19]

Doidic et al.

[11] Patent Number:

5,789,689

[45] Date of Patent:

Aug. 4, 1998

[54] TUBE MODELING PROGRAMMABLE
DIGITAL GUITAR AMPLIFICATION
SYSTEM

[76] Inventors: Michel Doidic, 7611 Truxton, Los Angeles, Calif. 90045; Michael Mecca, 1210 Appleton Way, Venice, Calif. 90291; Marcus Ryle, 2167 W. Ridge, Los Angeles, Calif. 90049; Curtis Senffner, 1433 17th St. #2, Sta. Monica, Calif. 90404

[21] Appl. No.: 785,004

[22] Filed: Jan. 17, 1997

[51] Int. Cl.⁶ G10H 1/02; G10H 7/12;
H03F 19/00; H03M 1/62[52] U.S. Cl. 84/603; 84/607; 84/621;
84/629; 84/630; 84/631; 84/633; 341/138;
381/118; 381/120[58] Field of Search 84/601, 602-607,
84/621, 626-633, 662-665; 330/10, 251;
381/111, 116-118, 120; 379/100; 341/138-140

[56]

References Cited

U.S. PATENT DOCUMENTS

3,357,291	12/1967	Carmichael	84/267
3,524,143	8/1970	Munch, Jr.	330/30
3,539,699	11/1970	Johnson	84/1.16
3,683,293	8/1972	Matsui	330/31
3,835,409	9/1974	Laub	330/13
4,151,477	4/1979	Yokoyama	330/107
4,175,462	11/1979	Simon	84/1.16
4,194,165	3/1980	Skulski	252/255
4,211,893	7/1980	Smith	179/1
4,251,688	2/1981	Furner	179/1
4,495,640	1/1985	Frey	381/61

(List continued on next page.)

OTHER PUBLICATIONS

Dattorro, Joa. "The Implementation of Recursive Digital Filters for High-Fidelity Audio." *Journal of the Audio Engineering Society*, 36:11 (1988).

Hirata, Yoshimitsu. "Digitalization of Conventional Analog Filters for Recording Use." *Journal of the Audio Engineering Society*, 29:5 (1991).

Line 6, AxSys 212 User Manual 1996.

Moorer, James A. "About This Reverberation Business", *Computer Music Journal*, 3:2 (1979).

Oppenheim and Schaefer. "Allpass Systems". *Discrete-Time Signal Processing*, pp. 234-240. (Prentice-Hall 1989).

Oppenheim and Schaefer. "Filter Design Technique". *Discrete-Time Signal Processing*, pp. 403-513. (Prentice-Hall 1989).

Proakis and Manolakis. "Random Number Generators". *Digital Signal Processing*, B6. (Prentice-Hall, 1996).

Proakis and Manolakis. "Design of Digital Filters". *Digital Signal Processing*, pp. 614-737. (Prentice-Hall, 1996).

Regalia et al. "The Digital All-Pass Filter: A Versatile Signal Processing Building Block". *Proceedings of the IEEE*, 76:1 (1988).

Roland. Guitar Preamp/Processor GP-100 Owners Manual 1995.

Roland. Guitar Preamp/Processor GP-100 Advertisement 1995.

Stauner and Puckett. "Designing Multi-Channel Reverberators." *Computer Music Journal*, 6:1 (1982).

Wilson, Rhonda "Filter Topologies". *Journal of the Audio Engineering Society*, 41:9 (1993).

Primary Examiner—Stanley J. Witkowski

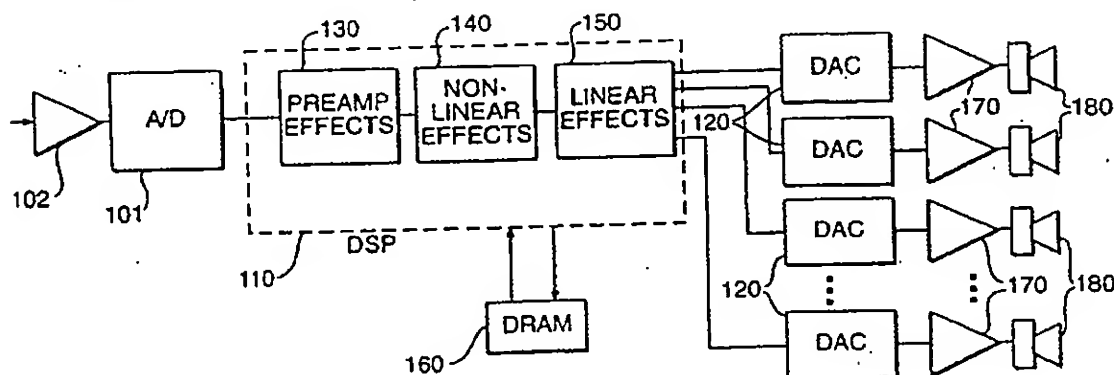
Attorney, Agent, or Firm—Finnegan, Henderson, Farabow, Garrett & Dunner, LLP

[57]

ABSTRACT

An electric guitar amplifier which utilizes a digital signal processor to produce vacuum-tube-like distortion without certain unwanted audio artifacts created by previous digital realizations of nonlinear, high-gain functions. By virtue of a microprocessor-controlled digital signal processor embodiment, the invention gives the user programmable control over parameters normally associated with state of the art guitar amplifiers (e.g. tone controls, reverb controls, tremolo controls, etc.), as well as other musically useful parameters which are not normally included among the controls of a guitar amplifier (e.g. selection of preamp type, autovolume, reverberation type, autowah, etc.).

45 Claims, 18 Drawing Sheets





US005802182A

United States Patent [19]

Pritchard

[11] Patent Number: 5,802,182

[45] Date of Patent: Sep. 1, 1998

[54] AUDIO PROCESS DISTORTION

[76] Inventor: Eric K. Pritchard, Rte. 1 Box 536,
Berkeley Springs, W. Va. 25411

[21] Appl. No.: 759,128

[22] Filed: Dec. 2, 1996

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 281,019, Jul. 27, 1994.

[51] Int. Cl.⁶ H03G 3/00

[52] U.S. Cl. 381/61; 381/65

[58] Field of Search 381/61, 64, 65,
381/63, 98, 106

[56] References Cited

U.S. PATENT DOCUMENTS

1,830,402 11/1931 Miesner.
1,977,469 10/1934 Bussard.
3,789,143 1/1974 Blackmer.
4,096,438 6/1978 Humphrey.
4,150,253 4/1979 Kaoppel.
4,586,192 4/1986 Amston.
4,627,094 12/1986 Scholz.
4,731,852 3/1988 Liljeryd.
5,091,700 2/1992 Smith.
5,133,015 7/1992 Scholz.
5,173,178 12/1992 Kawashima et al.
5,243,660 9/1993 Zagorski.
5,437,114 1/1996 Dinh.

5,596,646 1/1997 Waller, Jr.

OTHER PUBLICATIONS

Audio, Radio and TV Circuits, LM380, 3 pages.
Library of Congress Cataloging-in-Publicata Data, Rashid,
M.H., SPICE for circuits and electronics using PSpice/
Muhammad H. Rashid, 5 pages.
Properties of Magnetic Disks and Tapes, 1 page.
Recording with AC-Bias, p. 472.

Primary Examiner—Forester W. Isen

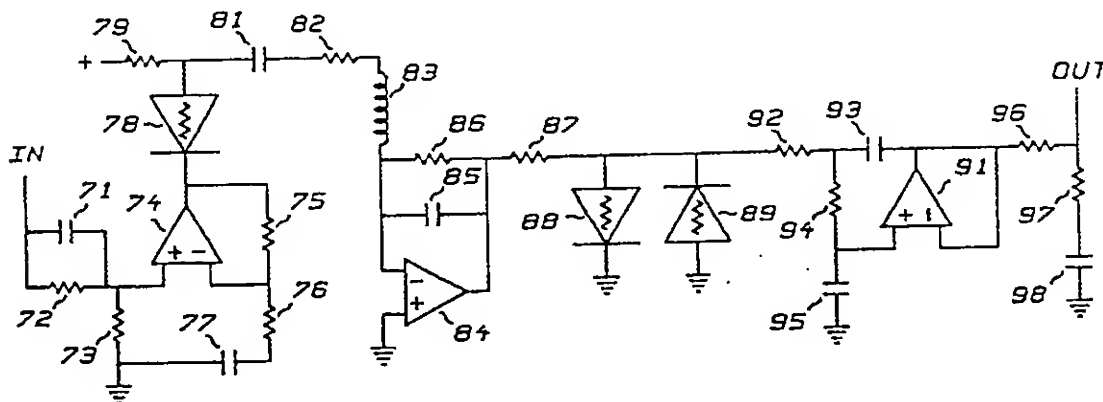
Attorney, Agent, or Firm—Barnes & Thornburg

[57] ABSTRACT

The audio process is a signal path having a plurality of filters connected or including distortion means. The prime example of this phenomenon surrounds inductances such as found in magnetic tape recorders, spring reverberators, and transformers. The inductors require a pre-emphasis filter to produce a constant current. Secondly there are the complementary filters associated with the average spectrum of audio which are used to maximize the signal to noise ratio. Ideally the net response of the filters is flat, however, roll-offs at the audio extremes are quite common.

The audio process distortion emulates the distortion of the active devices between the filters such as vacuum tube and magnet non-linearities. Since the distortion devices follow filters, the spectra of distortion is different than the frequency response.

27 Claims, 3 Drawing Sheets





US006350943B1

(12) **United States Patent**
 Suruga et al.

(10) Patent No.: **US 6,350,943 B1**
 (45) Date of Patent: **Feb. 26, 2002**

(54) **ELECTRIC INSTRUMENT AMPLIFIER**

(75) Inventors: Michio Suruga, Inagi; Yoshihiro Suzuki, Tama; Kentaro Matsumoto, Kawasaki, all of (JP)

(73) Assignee: Korg, Inc., Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/750,861

(22) Filed: Dec. 28, 2000

(51) Int. Cl.⁷ G10H 1/12; G10H 1/46

(52) U.S. Cl. 84/603; 84/661; 84/665; 84/DIG. 9; 84/DIG. 10

(58) Field of Search 84/603, 626-633, 84/662-665, 659-661, 701-711, 735-741, DIG. 9, DIG. 10

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,789,689 A 8/1998 Doidic et al.

Primary Examiner—Stanley J. Witkowski

(74) Attorney, Agent, or Firm—Muramatsu & Associates

(57) **ABSTRACT**

An electric instrument amplifier emulates an audio characteristics of a traditional vacuum-tube type amplifier. The electric instrument amplifier is formed in a single housing for amplifying an audio signal from an electric instrument. The electric instrument amplifier includes an A/D (analog-to-digital) converter for converting a first analog signal from the electric instrument to a digital signal, a digital signal processing circuit for processing the digital signal to add an intended effect to the digital signal, a D/A (digital-to-analog) converter for converting the digital signal processed by the digital signal processing circuit to a second analog signal, a tube amplifier having at least one vacuum-tube for amplifying the second analog signal, and a virtual power circuit formed with semiconductor devices for amplifying or attenuating an audio signal produced by the tube amplifier.

11 Claims, 7 Drawing Sheets

